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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,539	11/20/2003	Won Hee Lee	P24569	5670

7055 7590 10/05/2004

GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

ZEC, FILIP

ART UNIT PAPER NUMBER

3744

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/716,539	LEE ET AL.	
	Examiner	Art Unit	
	Filip Zec	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-14 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 4 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5, 6, 10, 11, 13, 14, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,396,776 to Kim. Looking at FIG. 6 of Kim, one notices the elements claimed by the applicant, namely an accumulator (5, FIG. 5) in a refrigeration circuit (FIG. 5) comprising a compressor (1, FIG. 5), a plurality of heat exchangers (4, 2, FIG. 5), a control valve for controlling the flow of the refrigerant (10, FIG. 5), an expansion device (3, FIG. 5), wherein said accumulator comprises a body having empty space inside (see FIG. 6), a refrigerant inlet from the top (between pipes 15a and 15b), refrigerant outlet from the bottom (16) upwardly parallel to the inlet and an inside heater for heating the flowing refrigerant (15), said heater being on the inner bottom of the accumulator and being at 70% or less of the entire body height (see FIG. 6).

3. Claims 1-3, 5, 6, 10, 11, 13, 14, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent JP 2-154957 to Ko. Looking at FIG. 2 of Ko, one notices the elements claimed by the applicant, namely an accumulator (8, FIG. 1) in a refrigeration circuit (FIG. 1) comprising a compressor (1, FIG. 1), a plurality of heat exchangers (4, 6, FIG. 1), a control valve for controlling the flow of the refrigerant (3, FIG. 1), an expansion device (5, FIG. 1), wherein said accumulator comprises a body having empty space inside (see FIG. 2), a

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refrigerant inlet from the top (9), refrigerant outlet from the bottom (10) upwardly parallel to the inlet and an inside heater for heating the flowing refrigerant (13), said heater being on the inner bottom of the accumulator and being at 70% or less of the entire body height (see FIG. 2).

4. Claims 1, 2, 5, 6, 10, 11, 13, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,605,058 to Kurachi et al. Looking at FIG. 30A of Kurachi, one notices the elements claimed by the applicant, namely an accumulator (17A, FIG. 11) in a refrigeration circuit (FIG. 11) comprising a compressor (1, FIG. 11), a plurality of heat exchangers (3, 5, FIG. 11), a control valve for controlling the flow of the refrigerant (21, FIG. 11), an expansion device (4, FIG. 11), wherein said accumulator comprises a body having empty space inside (see FIG. 30A), a refrigerant inlet (124) parallel to the refrigerant outlet (125) and an inside heater (148; col 27, line 19) for heating the flowing refrigerant, said heater being on the inner bottom of the accumulator and being at 70% or less of the entire body height (see FIG. 30A).

5. Claims 1, 2, 5, 6, 10, 11, 13, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,551,255 to Rothfleisch. Looking at FIG. 5 of Rothfleisch, one notices the elements claimed by the applicant, namely an accumulator (22, FIG. 6) in a refrigeration circuit (20, FIG. 6) comprising a compressor (28, FIG. 6), a plurality of heat exchangers (34, 38, FIG. 6), a control valve for controlling the flow of the refrigerant (32, FIG. 6), an expansion device (44, 48, FIG. 6), wherein said accumulator comprises a body having empty space inside (68), a refrigerant inlet (24) parallel to the refrigerant outlet (26) and an inside heater (56) for heating the flowing refrigerant, said heater being on the inner bottom of the accumulator and being at 70% or less of the entire body height (see FIG. 5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 7-9 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,396,776 to Kim, in view of U.S. Patent 5,966,952 to Misawa et al. Kim discloses applicant's basic inventive concept, an accumulator (5, FIG. 5) in a refrigeration circuit (FIG. 5) comprising a compressor (1, FIG. 5), a plurality of heat exchangers (4, 2, FIG. 5), a control valve for controlling the flow of the refrigerant (10, FIG. 5), an expansion device (3, FIG. 5), wherein said accumulator comprises a body having empty space inside (see FIG. 6), a refrigerant inlet from the top (between pipes 15a and 15b), refrigerant outlet from the bottom (16) upwardly parallel to the inlet and an inside heater for heating the flowing refrigerant (15), said heater being on the inner bottom of the accumulator and being at 70% or less of the entire body height (see FIG. 6), substantially as claimed with the exception of stating the use of multiple heaters, having different capacities and being able to be separately controlled. Misawa shows multiple heaters, having different capacities and being able to be separately controlled (col 2, lines 52-54) to be old in the refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Misawa to modify the system of Kim, by having multiple heaters, having different capacities and being able to be separately controlled in order to improve defrosting of the unit inside.

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8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,396,776 to Kim (Kim '776), in view of U.S. Patent 6,519,971 to Kim (Kim '971). Kim '776 discloses applicant's basic inventive concept, an accumulator (5, FIG. 5) in a refrigeration circuit, substantially as claimed with the exception of stating the use of multiple compressors, having different capacities. Kim '971 shows multiple compressors (1a and 1b, FIG. 2) in a refrigeration circuit having different capacities (col 1, line 44) to be old in the refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Kim '971 to modify the system of Kim '776, by having multiple compressors with different capacities in order to improve the efficiency (col 1, line 40).

Allowable Subject Matter

9. Claims 4 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,449,980 to Minister, David John teaches an accumulator in which liquid refrigerant leaving an evaporator may collect the oil in the accumulator and heating means either integral with or attached to the accumulator.

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U.S. Patent 5,404,730 to Westermeyer, Gary W. teaches a helical oil separator.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is (703) 306-3446 or (571) 272-4815. The examiner can normally be reached on Monday through Friday, with the exception of every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (703) 308-2597 or (571) 272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Filip Zec
Examiner
Art Unit 3744


CHERYL J. TYLER
PRIMARY EXAMINER

FZ